

Applicant : Andreas Muth et al.
For : DEVICE AND METHOD FOR PRODUCING INSULATION ELEMENTS
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In the Specification:

Please insert the following heading before paragraph [0001] (page 1).

BACKGROUND OF THE INVENTION

Please replace paragraph [0001] (page 1) with the following amended paragraph.

~~This invention relates to a device according to the preamble of claim 1, a method according to the preamble of claim 12 and an insulation element according to the preamble of claim 16 for producing insulated elements.~~

Please replace paragraph [0002] (page 1) with the following amended paragraph.

Insulation elements made of mineral ~~wool~~ wool, such as rock wool or glass wool, which are provided with a binder that bonds the mineral fibers together on curing, have been known for a long time. Insulation elements of this kind have proved their value in practice and are used in a large number of applications. They possess particularly good thermal insulation properties, are inexpensive, and easy to process.

Please replace paragraph [0005] (page 2) with the following amended paragraph.

It is also known from the prior art (DE 43 19 340 C1) how depressions can be generated in an uncured insulation blanket by providing an embossing or molding unit upstream of the curing oven, said molding unit being formed by oppositely disposed pressure belts with calotte-shaped segments having the shape of the desired depressions. The desired depressions are thus introduced into the insulation blanket while it still wet, and then, following the curing process, are filled with mineral bodies by way of which marks are generated to indicate the positions for screw anchors in the insulation blanket or panel. ~~The US patent 4 608-108- U.S. Patent No. 4,608,108 describes the use of molding rolls located upstream of the curing oven to produce a decorative, textured surface in an insulation blanket while it is still wet. This decorative textured pattern thus formed in the immediate surface region of the surface is retained after curing. In both the aforementioned cases, suitable embossing or molding units must be installed upstream of the curing oven, and the relief~~

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pattern is introduced into the uncured material while it is still wet. However, on account of the inherent resilience of a mineral wool blanket, the relief pattern introduced ahead of the tunnel furnace is, at least to some extent, lost again, so that secondary finishing is necessary.

Please insert the following heading before paragraph [0006] (page 2).

SUMMARY OF THE INVENTION

Please delete paragraph [0007] (page 2).

Please replace paragraph [0008] (page 2) with the following amended paragraph.

According to the invention, the interior of the curing oven is provided with a molding device which, while reducing the cross section of the gap through which the insulation material is transported within the curing oven and compacting the insulation material or insulation blanket as it passes through, influences the insulation material to such effect that permanent impressions and/or deformations are produced therein. The fact that the impressions and/or deformations in the insulation material are formed inside the curing oven ensures that they are formed exactly as desired with great ease, that is, perfectly in accordance with the profile of the molding device and, in principle, in a manner identical to embossing. This is because the insulation material is cured at the same time that it is pressure-molded; in other words, as the impressions or deformations are formed, their shape is “frozen” by the immediate curing process. As a result, secondary finishing – which is generally costly and time-consuming – can be dispensed with. The invention provides for the use of suitable molding belts, molding rolls or other compacting members within the curing oven, each of these being located at the place where the corresponding impression or deformation is to be produced. Since the impression is produced in an area where curing is not fully complete, a certain amount of material displacement occurs within the worked insulation blanket as a result of compaction; this helps to equalize the density over the cross section of the insulation material despite the compaction that has been effected. This invention is based on the idea of integrating the shaping process in the production process for the insulation body; more specifically, it is based

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on the idea of integrating the shaping process in the production process at the stage where the insulation material cures. At this stage, it is still easily possible to confer on the insulation material a specified cross-sectional profile that deviates from the original rectangular shape of the uncured mineral wool (e.g. e.g., a wedge shape, a rectangular shape with grooves, chamfered portions, etc.).

Please replace paragraph [0014] (page 4) with the following amended paragraph.

The attachable elements are preferably designed in a similar manner to conveyors known per se, by means of which the wet insulation material is transported into and through the curing oven. Conveyors of this kind are usually endless loops, or endless loops arranged in tandem, which are provided with openings or perforations to allow compaction by means of a pressurized-air supply, and, within the curing oven, curing by means of a hot-air supply. Within the curing oven, the conveyors are usually formed from grating segments that are hinged at their ends and allow the inflow of hot air to the insulation material. For this reason, it is ~~to advantage~~ advantageous if the conveyor units and/or compacting and guiding units within the curing oven are likewise provided with appropriate openings and perforations, or ~~ventilation channels, it also being expedient~~ channels. It is also advantageous to design the individual elements in segments that can be hinged together to form a loop conveyor. In particular, the attachable elements are engineered as metal components in the form of gratings, that is, provided with perforations or ventilation channels, and are preferably made of heat-resistant materials. It is ~~to advantage~~ advantageous to have the molding devices, especially in the form of attachable elements, rolls, or the like, arranged at the feed end, i.e. in the anterior section of the curing oven, because this is where the curing process begins and where the formation of impressions and/or deformations can be effected easily and without damaging the fibers. If the molding device, e.g. e.g., the attachable elements, is engineered to extend a long way into the curing oven, or, as is particularly preferable, to the end of the curing oven, the desired impressions and/or deformations are especially true to shape; they are, so to speak, the identical match of the attachable elements and the like. The attachable elements, in particular, are also designed as segments so that they can move freely around the idle rolls when

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engineered as endless loops. Additionally, the molding or attachable elements can have any cross-sectional profile desired, for example a rectangular, triangular, trapezoidal shape, etc., so that corresponding grooves can be formed in the insulation material. Depending on how the molding devices are designed, it is also possible to produce pictograms, circular depressions and the like, as well as impressions that can be used, for example, for product markings.

Please insert the following heading before paragraph [0019] (page 6).

BRIEF DESCRIPTION OF THE DRAWINGS

Please insert the following heading before paragraph [0029] (page 7).

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Please replace paragraph [0037] (page 9) with the following amended paragraph.

Another embodiment of a molding element 11, engineered as attachable as an attachable element, can be seen in Fig. 7, which shows a partial cross-sectional view of a part of a device for producing insulation panels according to the invention. In this embodiment, the molding element consists of a single member which extends over the entire width of, for example, the conveyor unit 3. The height of the molding element 11 decreases across the breadth thereof, so that the molding surface 12 is inclined with respect to the conveyor unit 3 or to the original conveying plane 15 of the conveyor unit 3. This wedge-shaped design of the molding element 11 or attachable element 11 produces a wedge-shaped thermal insulation element whose principal surfaces are mutually inclined, i.e. subtend an angle. Insulation elements of this nature are especially suitable for the insulation of sloping roofs, roof flashings, valley roofs etc., where the insulation panels need a suitable surface incline of 2 to 5 % in order to ensure that rainwater will run off to the roof outlets. Thermal insulation panels of this kind are readily manufactured with the devices shown in Fig. Figs. 7 to 10.